

K1 vacuum chamber; and

J1 a mechanism provided to said vacuum chamber for transporting said substrate from said ion introducing apparatus to said laser processing chamber without exposing said substrate to the air,

said dopant impurity being made a plasma around a grid electrode of said ion introducing apparatus and being accelerated toward said semiconductor layer by a voltage applied to an anode electrode of said ion introducing apparatus.

Cent. J2 31. (Amended) The apparatus of claim 16 wherein said laser is placed outside said laser processing chamber, said laser processing chamber having a window through which said laser light is introduced into said laser processing chamber.

J3 32. (Amended) The apparatus of claim 16 further comprising a chamber, connected with said vacuum chamber, for introduction and takeout of said substrate.

J4 20. (Amended) The apparatus of claim 17 wherein said laser light is rectangular-shaped on a surface of said semiconductor film, and said laser processing chamber is provided with a mechanism for moving said substrate in a direction orthogonal to a longitudinal direction of said laser light in order that a whole surface of said substrate is scanned with said laser light.

Sub J2 5  
J5 56. (Amended) An apparatus for processing a semiconductor comprising:  
a vacuum chamber;  
an ion introducing apparatus connected to said vacuum chamber for doping a semiconductor layer formed over a substrate with a dopant impurity;  
a laser processing apparatus comprising a laser processing chamber and a laser for treating said semiconductor layer with a rectangular shaped laser light in said laser processing chamber after said doping, said laser processing chamber connected to said ion introducing apparatus through said

vacuum chamber; and

a mechanism provided to said vacuum chamber for transporting said substrate from said ion introducing apparatus to said laser processing chamber without exposing said substrate to the air, said rectangular-shaped laser light has a length greater than a width of said substrate, said dopant impurity being made a plasma around a grid electrode of said ion introducing apparatus and being accelerated toward said semiconductor layer by a voltage applied to an anode electrode of said ion introducing apparatus.

57. (Amended) The apparatus of claim 56, wherein said substrate is glass.

58. (Amended) The apparatus of claim 56 wherein said substrate is 300 mm. x 400 mm and said rectangular-shaped laser light is 2 mm x 350 mm.

59. (Amended) The apparatus of claim 56 wherein said laser processing apparatus further comprises a sample holder for moving said substrate in a direction orthogonal to said rectangular-shaped laser light.

74. (Amended) An apparatus for forming a semiconductor device comprising:  
a vacuum chamber;  
an ion introducing apparatus connected with said vacuum chamber for doping a semiconductor layer formed over a substrate with a dopant impurity;  
a laser processing apparatus comprising a laser processing chamber and a laser for treating said semiconductor layer with a laser light in said laser processing chamber after said doping, said laser processing chamber connected to said ion introducing apparatus through said vacuum chamber; and  
a mechanism provided to said vacuum chamber for transporting said substrate from said ion introducing apparatus to said laser processing chamber without exposing said substrate to the air,

K3  
J8  
cont.

said dopant impurity being made a plasma around a grid electrode of said ion introducing apparatus and being accelerated toward said semiconductor layer by a voltage applied to an anode electrode of said ion introducing apparatus.

Sub  
K4  
J9  
cont.

75. (Amended) An apparatus for processing a semiconductor comprising:

- a vacuum chamber;
- an ion introducing apparatus connected with said vacuum chamber for doping a semiconductor layer formed over a substrate with a dopant impurity;
- a light processing apparatus comprising a light processing chamber and a light source chamber for treating said semiconductor layer with an infrared light in said light processing chamber after said doping, said light processing chamber connected to said ion introducing apparatus through said vacuum chamber; and
- a mechanism provided to said vacuum chamber for transporting said substrate from said ion introducing apparatus to said light processing chamber without exposing said substrate to the air,

said dopant impurity being made a plasma around a grid electrode of said ion introducing apparatus and being accelerated toward said semiconductor layer by a voltage applied to an anode electrode of said ion introducing apparatus.

76. (Amended) An apparatus for processing a semiconductor comprising:

- a vacuum chamber;
- an ion introducing apparatus connected with said vacuum chamber for doping a semiconductor layer formed over a substrate with a dopant impurity;
- a light processing apparatus comprising a light processing chamber and a light source chamber for irradiating an infrared light to a part of said semiconductor layer doped with said dopant impurity, the irradiation of said infrared light conducted in said light processing chamber, said light processing chamber connected to said ion introducing apparatus through said vacuum chamber; and

a mechanism provided to said vacuum chamber for transporting said substrate from said ion introducing apparatus to said light processing chamber without exposing said substrate to the air,

said dopant impurity being made a plasma around a grid electrode of said ion introducing apparatus and being accelerated toward said semiconductor layer by a voltage applied to an anode electrode of said ion introducing apparatus.

77. (Amended) An apparatus for processing a semiconductor comprising:

a vacuum chamber;

an ion introducing apparatus connected with said vacuum chamber for doping a semiconductor layer formed over a substrate with a dopant impurity;

a laser processing apparatus comprising a laser processing chamber and a laser for irradiating a laser light to a part of said semiconductor layer doped with said dopant impurity, the irradiation of said laser light conducted in said laser processing chamber, said laser processing chamber connected to said ion introducing apparatus through said vacuum chamber; and

a mechanism provided to said vacuum chamber for transporting said substrate from said ion introducing apparatus to said laser processing chamber without exposing said substrate to the air,

said dopant impurity being made a plasma around a grid electrode of said ion introducing apparatus and being accelerated toward said semiconductor layer by a voltage applied to an anode electrode of said ion introducing apparatus.

80. (Amended) The apparatus of claim 16 wherein said semiconductor layer placed in said ion introducing apparatus has a silicon oxide layer formed over said semiconductor layer.

81. (Amended) The apparatus of claim 16 wherein said semiconductor layer placed in said ion introducing apparatus has a silicon oxide layer formed over said semiconductor layer.